

Can you find me now? Can you find me now? Can you find me now?

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Cascade High School
Clayton, IN

TIME: 6 class periods, 50 minutes long and ½ day field trip.

GRADE LEVEL: 9-12

PURPOSE:

For students to locate points using longitude and latitude coordinates and to give students hands-on experience with GPS.

STANDARDS:

ES.1.23 Identify locations of materials in/on the Earth's lithosphere.

- GPS will give precision locations on the Earth's surface.
- Mapping exercise with the terraserver will locate materials on the Earth's surface.

ES. 1.6 Discuss how manned and unmanned space vehicles can be used to increase our knowledge and understanding of the universe.

- Identifying how satellites are used in GPS and the applications of the technology.

ES.1.8 Discuss the role of sophisticated technology, such as telescopes, computers, space probes, and particle accelerators, in making computer simulations and mathematical models in order to form a scientific account of the universe.

- Identifying how satellites are used in GPS and the applications of the technology.

OBJECTIVES:

1. Students will locate their home by latitude and longitude coordinates.
2. Students will understand what GPS is and the basics behind how it works.
3. Students will accurately use GPS to locate specific coordinates.

MATERIALS:

Computer with internet access, hand-held GPS, paper, pen/pencil, transportation, tracking bugs purchased through geocaching, science journal.

PROCEDURE:

1. Hand out worksheet
2. Have students' complete steps 1-2. Follow with a group discussion and demonstration on how to use our hand-held GPS.
3. Create a geocaching map for around our school yard containing 5 sites.
4. Pass out geocaching map to complete outdoor assignment.
5. Have students' complete step 4.
6. Lead a class discussion about the web site and tracking bugs.
7. Show the pre-purchased tracking bugs. Include a group decision about what we should leave in each of the geocaches we will be visiting.

8. Take a field trip to locate each of the 5 locally hidden geocaches using hand-held GPS. Leaving the items predetermined in each box with a tracking bug attached.
9. Have students write a short entry in their science journals describing your field trip experience.
10. Lead a discussion for creating our own geocaches. Determine the hiding spot and its exact location with the GPS. Determine 5-8 items to include in the geocaches.
11. Have the technology department assist me with joining the geocaching web site and including a web page on our school site for all to be able to track our moving bugs.
12. Refer back to the internet site every 6 weeks.

ASSESSMENT:

10 points for completion
40 points for 1 page research paper
10 points for accuracy of school yard geocaching
10 points for participation in field trip
5 points for science journal entry

TOTAL 75 points

EXTENTIONS: leadership/social skills, mathematics for graphing and plotting, geography for mapping

RESOURCES:

Geocaching homepage <http://www.geocaching.com>
Aerial photographs <http://terraserver.homeadvisor.msn.com>
GPS information pages for the discussion and demonstrations www.cees.IUPUI.edu/resources/ and www.esri.com

Can you find me now? Can you find me now? Can you find me now?

Name _____

1. Open the terra server web site listed in the resource section below. Type in your home town followed by the state.

(Example... Clayton, IN)

Click on aerial photograph. Use the scroll buttons to find your house. Once you find it, zoom in on it. Click on image info. Record the approximate latitude and longitude of your home here.

Lat. _____

Long. _____

(Day 1)

2. GPS, what is it and how do you use it? Using the internet, research global positioning systems to find out how it works and at least 15 applications for the system. Type a 200 word paper showing your results. **(Day 1 and Day 2)**

3. Open the geocaching web site in the resource section below. Read to discover exactly what geocaching is all about. Then, obtain a geocaching coordinate map from your teacher to locate 5 sites in the school yard using the GPS. Record what your team found at each site below:

Site A _____

Site B _____

Site C _____

Site D _____

Site E _____

(Day 3)

4. Return to the geocaching web site given below. Locate 5 hidden geocaches near Cascade High School. On your own paper, record the coordinates for where each is hidden. Also, read about tracking bugs on this site. **(Day 4)**

5. We will be taking a field trip to locate several of these geocaches sites. **(Day 5)**

6. Write a 1 page entry in your science journal describing your geocaching experience. Be honest. Describe what you liked or didn't like. What was easy and/or difficult? Express your feelings. **(Day 6)**

GRADING:

10 points for completion

40 points for 1 page research paper

10 points for accuracy of school yard geocaching

10 points for participation in field trip
5 points for science journal entry

TOTAL 75 points

RESOURCES: <http://www.geocaching.com>
<http://teraserver.homeadvisor.msn.com>